In the Claims:

Claim Status is now:

1. (Currently amended) A method ~~for~~ of producing an inert anode for metal oxide electrolytic reduction, comprising the steps of:

providing a substrate consisting of a metal, a cermet, or a ceramic material;

forming a molten metal oxide compound comprising ferrite and at least one divalent metal selected from the group consisting of iron, nickel, manganese, magnesium, and cobalt; and

coating said substrate with said molten metal oxide compound to form an inert anode.

2. (Original) A method according to claim 1, wherein said substrate is oxidized, whereby it promotes adherence of said molten metal oxide compound.

3. (Original) A method according to claim 1 further comprising attaching an electrical connector to said anode substrate.

4. (Original) A method according to claim 1 wherein said substrate is a metal selected from the group consisting of iron, nickel, cobalt, chromium, copper, manganese, magnesium, or an alloy thereof.

5. (Original) A method according to claim 1 wherein said substrate is a cermet selected from the group consisting of nickel ferrite in combination with silver, copper, nickel, copper-silver alloy, nickel-copper alloy, or nickel-copper-silver alloy.

6. (Original) A method according to claim 1 wherein said substrate is a nickel ferrite ceramic material.

7. (Original) A method according to claim 6, wherein said ceramic further includes at least one metal ion selected from the group consisting of manganese, magnesium, and cobalt.

8. (Original) A method according to claim 1 wherein said substrate is bi-metallic.

9. (Original) A method according to claim 8 wherein said bi-metallic substrate is an iron base metal and nickel or nickel alloy.

10. (Original) A method according to claim 8 wherein said bi-metallic substrate is iron-nickel-chromium alloy and nickel.

11. (Original) A method according to claim 1, wherein said molten metal oxide compound is formed by melting oxides of iron and at least one other metal, or by oxidizing iron and at least one other metal to form a molten ferrite.

12. (Original) A method according to claim 1, wherein said step of coating said substrate is carried out by spray atomization, immersion of said substrate in a bath of said molten metal oxide compound, or by pouring said molten metal oxide compound onto said substrate.

13. (Original) A method according to claim 1, wherein said substrate has a surface, said surface being provided with raised or indented portions.

14. (Original) A method according to claim 13, wherein said surface is provided with knurls, dimples, or a waffle pattern.

15. (Original) A method according to claim 1, wherein said molten metal oxide compound includes a metal dispersed therein, said metal being selected from the group consisting of silver, copper, nickel, copper-silver alloy, nickel-copper alloy, or nickel-copper-silver alloy.

16. (Original) A method according to claim 1, further comprising adding a dopant to the molten metal oxide compound.

17. (Original) A method according to claim 16, wherein the dopant is selected from the group consisting of zinc, cobalt, or lithium compounds.

18. (Original) A method according to claim 17 wherein the compounds are oxides.

19. (Original) A method according to claim 17 wherein the compounds are carbonates or sulfides.

20. (Original) A method according to claim 1, further comprising a post-coating heat treatment of the coated anode in an oxygen-containing atmosphere.

21. (Original) A method according to claim 20 wherein said post-coating heat treatment is an anneal of the coated anode.

22. (Original) A method according to claim 20 wherein said post-coating heat treatment is a phase composition adjustment comprising: soaking the anode at a temperature of from 1000oC to 1400oC for a sufficient time to oxidize any remaining metallic nickel and metallic iron.

23. (Original) A method according to claim 22 further comprising slow cooling the anode to a temperature of from 100 to 400°C lower than said soaking temperature.

24. (Original) A method according to claim 23 further comprising soaking said anode in an oxygen-containing gas for a second period of time at a temperature to which the anode has been slow cooled, for final phase composition adjustment and microstructure adjustment.

25. (Original) A method according to claim 23 further comprising hot isostatic pressing of the anode at a temperature of at least 1000°C and a pressure of at least 1360 bar for a period of from about 4 to about 8 hours.

26. (Original) A method according to claim 24 further comprising hot isostatic pressing of the anode at a temperature of at least 1000°C and a pressure of at least 1360 bar for a period of from about 4 to about 8 hours.

27. (Original) A method for producing an inert anode for metal oxide electrolytic reduction, comprising the steps of:

providing a substrate consisting of a metal, a cermet, or a ceramic material;

feeding at least one compound selected from the group consisting of nickel oxides, iron oxides, nickel ferrite, iron sulfides, nickel sulfides, iron carbonates, nickel carbonates, or mixtures thereof, to a melting vessel;

melting the compounds and forming molten nickel ferrite;

discharging molten nickel ferrite from the melting vessel at a temperature sufficient to maintain the molten nickel ferrite in the molten state;

adding a dopant to the nickel ferrite to form a molten mixture; and

coating said substrate with said molten mixture to form an inert anode.

28. (Original) A method according to claim 27, wherein the dopant is selected from the group consisting of zinc, cobalt, or lithium compounds.

29. (Original) A method according to claim 28 wherein the dopant compounds are oxides.

30. (Original) A method according to claim 28 wherein the dopant compounds are carbonates or sulfides.

31. (Original) A method for producing an inert anode for metal oxide electrolytic reduction, comprising the steps of:

providing a substrate consisting of a metal, a cermet, or a ceramic material;

feeding metallic iron and metallic nickel in solid form to an oxidizing reactor;

melting and oxidizing the iron and nickel and forming molten nickel ferrite;

discharging molten nickel ferrite from the oxidizing reactor at a temperature sufficient to maintain the molten nickel ferrite in the molten state;

adding a dopant to increase electrical conductivity to the nickel ferrite and to form a molten mixture; and

coating said substrate with said molten mixture to form an inert anode.

32. (Original) A method according to claim 31, wherein the dopant is selected from the group consisting of zinc, cobalt, or lithium compounds.

33. (Original) A method according to claim 32 wherein the dopant compounds are oxides, carbonates or sulfides.

34 - 44. (Cancelled)